

## YEAR 12 - MATHEMATICS

### HSC Topic 5 – Bivariate Data Analysis

## MATHEMATICS ADVANCED

### LEARNING PLAN

Learning Intentions Student is able to:	Learning Experiences Implications, considerations and implementations:	Success Criteria I can:	Resources
construct a bivariate scatterplot to identify patterns in the data that suggest the presence of an association	- identify the dependent and independent variables within bivariate datasets where appropriate	Define when a set is bivariate and construct a scatterplot. Considering the dependent and independent variable.	
use bivariate scatterplots (constructing them where needed), to describe the patterns, features and associations of bivariate datasets, justifying any conclusions	<p>- describe bivariate datasets in terms of form (linear/non-linear) and in the case of linear, also the direction (positive/negative) and strength of association (strong/moderate/weak).</p> <p>- describe and interpret a variety of bivariate datasets involving two numerical variables using real-world examples in the media or those freely available from government or business datasets</p>	Describe the pattern formed by a scatterplot and interpret this relationship in real world examples.	

calculate and interpret Pearson's correlation coefficient ( $r$ ) using technology to quantify the strength of a linear association of a sample	– Determine Pearson's correlation coefficient using spreadsheets and the calculator.	Determine Pearson's correlation and use the value to interpret the strength of the relationship	<a href="#">Online calculator</a>
model a linear relationship by fitting an appropriate line of best fit to a scatterplot and using it to describe and quantify associations	<ul style="list-style-type: none"> <li>- fit a line of best fit to the data by eye and using technology</li> <li>- fit a least-squares regression line to the data using technology</li> <li>- interpret the intercept and gradient of the fitted line</li> </ul>	<p>Construct a line of best fit by eye and determine its equation.</p> <p>Use a calculator and spreadsheets to determine the least-squares regressions line.</p> <p>Interpret the meaning of gradient and y intercept for the given scenario.</p>	<a href="#">Calculator instructions</a>  <a href="#">Understanding the least squares regression line</a>
use the appropriate line of best fit, both found by eye and by applying the equation of the fitted line, to make predictions by either interpolation or extrapolation	- distinguish between interpolation and extrapolation, recognising the limitations of using the fitted line to make predictions, and interpolate from plotted data to make predictions where appropriate.	<p>Interpolate and extrapolate predictions from the data.</p> <p>Appreciate that there are limitations for both of these predictions.</p>	
implement the statistical investigation process to answer questions by identifying, analysing and describing associations between two numeric variables	–	Make a conclusion to a given situation by interpreting the data,	
construct, interpret and analyse scatterplots for bivariate numerical data in practical contexts	- demonstrate an awareness of issues of privacy and bias, ethics, and responsiveness to diverse groups and cultures when collecting and using data		

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Past HSC Questions			

Established Goals (Syllabus Outcomes):
Estimated Time: 3 Weeks

ASSESSMENT	
Performance Tasks: (Linked to Essential Questions) <a href="#">Traffic light task</a>	Other Evidence: